STATE OF ILLINOIS

ILLINOIS COMMERCE COMMISSION

IN THE MATTER OF THE PETITION OF THE CITY OF PEKIN, a municipal corporation, FOR APPROVAL PURSUANT TO 735 ILCS 5/7-102 TO CONDEMN A CERTAIN PORTION OF THE WATERWORKS SYSTEM OF ILLINOIS AMERICAN WATER COMPANY	))))))	Docket 02-0352

REBUTTAL TESTIMONY OF CARL ADAMS

Q.1. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND TITLE.

A. My name is Carl Adams and I am a Principal and President/Chief Executive Officer of The ADVENT Group, Inc. ("ADVENT"), of Brentwood Tennessee. ADVENT is located at 201 Summit View Drive, Suite 300, Brentwood, TN 37027.

Q.2. PLEASE DESCRIBE YOUR EMPLOYMENT AND EDUCATION HISTORY.

A. I received my Ph.D. in Environmental Health Engineering in 1969 from The University of Texas, Austin. Prior to that, I received a Masters of Science in Sanitary and Water Resources Engineering and a Bachelor of Science in Civil Engineering from Vanderbilt University in Tennessee. Please see my Curriculum Vitae for all additional information attached as ADAMS EXHIBIT-A.

Q.3. PLEASE IDENTIFY YOUR PROFESSIONAL CERTIFICATIONS

A. I am a certified professional engineer in Alabama, Florida, Indiana, Kentucky, Louisiana, Mississippi, Ohio, Tennessee, and Texas.

Q.4. PLEASE IDENTIFY PUBLICATIONS THAT YOU HAVE WRITTEN THAT RELATE TO WASTEWATER TREATMENT AND WATER SUPPLY.

A. I have authored, co-authored or edited greater than 50 publications including four books. Please see my Curriculum Vitae attached as ADAMS EXHIBIT-A for specific titles.

Q.5. PLEASE IDENTIFY PRESENTATIONS, SEMINARS AND LECTURES THAT YOU HAVE GIVEN ON WASTEWATER TREATMENT AND WATER SUPPLY.

A. I have been the presenter or co-presenter of 135 national and international presentations, seminars and lectures. Please see my Curriculum Vitae attached as ADAMS EXHIBIT-A for specific titles.

Q.6. PLEASE PROVIDE A DESCRIPTION OF THE TYPES OF SERVICES THAT ADVENT PROVIDES.

A. I founded ADVENT in 1985 to provide the very best technical and integrated consulting and engineering services in the field of waste water management. Today, ADVENT is an international company with a total of eight offices in Nashville, Tennessee, Washington D.C., Eastham, Massachusetts, Golden, Colorado, Marietta, Georgia, India, Israel and Brazil. I have personally been involved in over 600 wastewater and water management projects in approximately 25 countries. For a more complete description of Advent's services, see ADAMS EXHIBIT-B.

Q.7. PLEASE DESCRIBE THE PURPOSE OF YOUR TESTIMONY

A. I was retained by counsel for the City of Pekin to evaluate the accuracy and adequacy of Illinois-American's witnesses' testimony regarding the management of the City of Pekin's wastewater treatment plant ("Pekin's POTW") and the competency of the City of Pekin with respect to assuming operations of the City of Pekin's water supply.

Q.8. PLEASE DESCRIBE THE PROCESS THAT YOU UNDERTOOK TO ACCOMPLISH THESE OBJECTIVES WITH RESEPCT TO PEKIN'S POTW .

A. In order to understand whether the Pekin POTW is managed in accordance with industry and regulatory standards, I began by establishing the best management

practices for the Pekin POTW. This process included evaluation of the Pekin POTW's: (1) employment of competent operational personnel; (2) capability of adequately monitoring performance of the POTW regarding, regulatory performance, operational performance, preventative maintenance procedures, and economic guidelines; (3) responsive monitoring by the contract operator to the City regarding period reporting, adherence to economic constraints, and proper budgetary and economic approval guidelines; and (4) overall performance monitoring regarding regulatory and economic aspects of the POTW.

A fundamental part of this process involved evaluating the competency of the operational contractor. This evaluation included ensuring: (1) use of qualified and experienced personnel; (2) proper implementation of the City's guidelines; (3) prompt responsiveness to abnormal and unexpected situations; and (4) proper documentation of normal and abnormal activities at the POTW.

Q.9. PLEASE DESCRIBE THE DOCUMENTS, RECORDS, FACILITES, FILES, AND INDIVIDUALS THAT YOU CONSULTED IN THIS PROCESS.

A. As part of this evaluation process, I reviewed the direct testimonies of several of Illinois American Water Company's ("Illinois-American") witnesses. I visited and had discussions with appropriate personnel of the Pekin POTW. I also reviewed many pertinent files, correspondence, and reports. Specifically, ADVENT's two visits to the Pekin POTW, on March 19 and 20, 2003 and March

24 and 25, 2003, coincided with high flow and average flow conditions at the treatment plant, respectively. These visits consisted of in-depth discussions with operational and City personnel and review of operational records and other pertinent information. In-depth discussions were held with Mr. Dennis Kief, the City of Pekin Public Works Director, and Mr. Don Hughes, the Chief Operator of the POTW. Also, discussions were held with other treatment plant operators, including Don Gasper, Larry Wolfer, Mike Birkmeier, and Joe Yavorshak.

In addition, various documents and correspondence were reviewed, including the following: (1) City of Pekin Wastewater Facility Plan, prepared by Farnsworth Group, Inc., August 2001; (2) City of Pekin Wastewater Facility Plan 2003 comments, prepared by The City of Pekin, January 2003; (3) *Operation of Municipal Wastewater Treatment Plants Manual of Practice*, Effluent Disinfection, FD-10, WEF; (4) *Manual of Practice MOP-11*, WEF; (5) Memo, Dennis Kief, Public Works Director record of excursions, January 9, 2003; (6) Various correspondence between The City of Pekin and the local region of Illinois Environmental Protection Agency, generally between Dennis Kief and Mr. James Kammueller, Manager Peoria Regional Office, IEPA; (7) Daily reports 2000 – 2003, Pekin Wastewater Treatment Plant; (8) Operator logs 2000 – 2003, Pekin Wastewater Treatment Plant; and (9) A telephone conversation with Mr. James Kammueller on March 24, 2003.

Q.10. PLEASE BRIEFLY DESCRIBE THE PEKIN POTW.

A. The City of Pekin operated the wastewater treatment plant in-house until 1993. At that time, the operational services were contracted to J.M.M. Operational Services, Inc. In 1998, J.M.M. was subsequently acquired by United Water Services. During this time and through the present, 4 or 5 of the City's original operational personnel were retained and are still employed as POTW operators. The City's Chief Operator, Mr. Don Gasper, a Class I Operator in the State of Illinois, retired in February 2003, but is retained as an active consultant by United Water. Prior to 1995, the various engineering consultants to the City actually conferred, coordinated, and reported to elected officials. In 1995, the City reorganized and established a City Manager, who supervised the Public Works Director. The Public Works Director was given responsibility for the management aspects of the Wastewater Treatment Plant, and it is his responsibility to coordinate these activities on behalf of the City of Pekin.

Q.11. PLEASE DESCRIBE YOUR UNDERSTANDING OF THE MANAGEMENT OF THE PEKIN POTW.

A. United Water Services, the Pekin POTW contract operator, reports directly to the Public Works Director, Mr. Dennis Kief. Mr. Kief visits and reviews operations at the Pekin POTW at least once or twice per week. Formal monthly meetings are held between the City and United Water Services to review and discuss the

performance, economics, and maintenance issues at the plant. These meetings are held the second Wednesday of each month at 10:00 a.m. at the Wastewater Treatment Plant. The Public Works Director receives a monthly printout of all expenditures related to the Pekin POTW. United Water Services operates under a budgetary constraint of allowable expenditures not-to-exceed $37,000 annually. They are allowed to spend up to $2,000 on individual items without prior approval from the City; however, any expenditure exceeding $2,000 must receive prior approval by the Director of Public Works. From an operational standpoint, any abnormal or unusual events are directly reported to the Public Works Director for informational purposes. Oftentimes, this will trigger a visit to the Pekin POTW by the Director of Public Works. United Water Services is responsible for collecting all regulatory data, assimilating it into a report, referred to as a Discharge Monitoring Report (DMR), and forwarding copies to the Illinois Environmental Protection Agency (IEPA), and the Director of Public Works in a timely fashion each month.

Q.12. HOW WOULD YOU CHARACTERIZE THE MANAGEMENT OF THE PEKIN POTW?

A. I consider the management criteria, guidelines, and involvement established by the City, to be excellent and in accordance with the procedures at other similarly-sized POTWs. This approach has proven to be very successful at Pekin, as evidenced by the reduction in the number of excursions from the treatment plant over the last three years. The excursions are presented chronologically in Figure

1 (attached as ADAMS EXHIBT-C) and indicate only one permit violation from the Pekin POTW outfall in the last three years. This violation was very minor with a monthly TSS violation of 28 mg/L as compared to the permit requirement of 25 mg/L.

Q.13. DO YOU CONSIDER THE PEKIN POTW OPERATORS TO BE QUALIFIED?

A. Yes. The on-site operational staff consists of five full-time operators and one consultant operator on retainer. The facility employs one Class I (highest category of operator in Illinois) and three Class IV operators. In addition, one operator is working to complete his Class I qualifications. In-depth discussions with all of these operators indicated a very knowledgeable and competent experience base. This operational experience included areas of process, maintenance, and instrumentation capabilities. Historically, each of the operators was capable of handling all the other positions, and the activities of the treatment plant were interchangeably assigned to various personnel. Recently (February 2003), the operational duties were reorganized to give separate responsibilities to specific personnel for maintenance as opposed to process activities. This reorganization is a good idea and should increase the degree of specialization in each area. However, it should be noted that the previous organization was very satisfactory for a plant of this size.

Q.14. DO YOU CONSIDER THE PEKIN POTW OPERATORS TO BE RESPONSIVE?

A. Yes. The City has two major issues that require prompt responsiveness by the on-site operators:

1. High flow. The treatment plant flow variability requires specific operator attention under high flow conditions due to an uneven split of flow to the three biological systems. The secondary splitter box provides unequal flow during high flow conditions and it is imperative that the operators balance these flows. The operators do respond quickly to adjust these flows and ensure a reasonable allocation to each biosystem.

2. High Influent Grease. Occasionally, the influent to the Pekin POTW experiences an abnormally high level of grease. Although the pretreatment system and primary clarifiers do a very good job of removing this grease, it can clog the primary clarifier scum boxes, thus, inhibiting further removal. Therefore, the operators must manually remove the plugged grease to allow the scum boxes to collect the grease and prevent it from entering the secondary systems.

In both cases mentioned above, ADVENT noticed a rapid and effective response by the operators to alleviate the problems. During ADVENT's two plant visits,

both high flow and high grease levels were observed, so it was possible to evaluate the operators' performance. The instances were properly entered and recorded in the Daily Report and/or the Operator Logbooks.

Q.15. DOES THE PEKIN POTW PROPERLY MAINTAIN AND MANAGE NECESSARY DOCUMENTATION?

A. Yes. Most recordkeeping at a properly managed wastewater treatment plant consists of maintaining:

1. Archived records of online data measurements, such as flow or dissolved oxygen. These are usually in the form of printer charts.
2. Operational data records, generally referred to as Daily Reports, in which actual operator-collected data are entered.
3. Operator logs where notations and certain data entries are maintained in a Daily Operator Logbook.
4. Maintenance records, which usually indicate various activities, such as preventative maintenance or repair.

The City of Pekin, through a contract operator United Water Services, maintains all of the above records. The plant utilizes a computerized maintenance program, referred to as MP2. This program is a generally accepted program used in other POTW applications. The MP2 software is used to track all maintenance

activities, and, as such, all maintenance activities are entered into the MP2 database as they are completed.

The POTW is also equipped with a SCADA system, which monitors specific parameters, such as various flows through the treatment plant, dissolved oxygen concentrations in the three aeration basins, and certain tank levels. A computer with a visual output of the SCADA is located in the main control building. A local instrumentation contractor, Koener Electric Co., calibrates all on-line instrumentation, as well as provides service and support for the SCADA system. Certain data from the SCADA system, such as flow and dissolved oxygen ("DO"), are entered into the Daily Report for ease of operator utilization. The Daily Report is an operational report summarizing daily activities required to assess the overall status of the treatment plant. Other information is entered in the Operator Logbook. This log is properly maintained and archived. I can clearly state that the plant maintains adequate records for overall wastewater treatment plant performance evaluation from both a data collection and maintenance standpoint.

Q.16. DO YOU CONSIDER THE PEKIN POTW'S OPERATIONAL MONITORING TO BE SUFFICIENT?

A. Yes. The flow equipment is calibrated quarterly and the DO probes are calibrated monthly by an outside contractor, Koener Electric Co. The plant has an on-site portable DO meter that is used occasionally to test the accuracy of the aeration

basin online probes. The treatment plant operators perform daily settleability tests on the biological sludges using the SSV test. Samples are collected and examined at 5, 30, and 60-minute intervals, which is the standard procedure for this test. Other parameters are performed daily, entered in the Operator Logbook, and summarized in the Daily Report. The above parameters, along with entries in the Operator Log, provide sufficient information to the operators to properly manage and operate the treatment plant.

Q.17. ILLINOIS-AMERICAN HAS OFFERED TESTIMONY FROM A NUMBER OF WITNESSES REGARDING THE ALLEGED COMPLEXITY OF THE PEKIN WATER SYSTEM. PLEASE DESCRIBE THE CITY OF PEKIN'S DRINKING WATER SYSTEM.

A. The City of Pekin’s drinking water plant is not a complex facility as exists with most cities, which must treat surface water. The proximity of an acceptable groundwater aquifer provides an economical and less complex drinking water supply than a surface water supply. The City of Pekin’s drinking water plant basically consists of operating seven wells to pump groundwater and distribute it through a piping system. This groundwater is subjected to fluoridation, chlorination, disinfection treatment, and activated carbon polishing in two of the wells.

A comparison of the unit processes for a conventional surface water system and a groundwater system is shown below:

MOST COMMON PROCESSES USED IN DRINKING WATER TREATMENT

Conventional Surface Water Plant	Groundwater Plant
1. Inlet Pumping	1. Groundwater Pumping
2. Protective Inlet Screens (Require Cleaning)	{Not Required}
3. Chemical Addition for Clarification (Coagulation, plus Flocculation Chemicals)	{Not Required}
4. Sand Filtration	{Not Required}
5. Sludge Handling for the Chemical Addition Sludges (Thickening, Dewatering, Disposal)	{Not Required}
6. Fluoridation / Chlorination	2. Fluoridation / Chlorination
7. Activated Carbon (if required)	3. Activated Carbon (if required)

A major complexity in operation for a conventional surface water drinking water facility is the use of large doses of chemicals to coagulate and precipitate turbidity and suspended materials, including taste and odor materials, in the influent surface water. The quality of the surface water varies with seasons and results in considerable operational attention. In addition, a sludge handling facility is necessary to handle the precipitated sludge, which requires quite a bit of operator attention. A groundwater system, on the other hand, basically treats a constant quality of water and is much simpler to operate.

In comparison to the wastewater treatment plant operations, the City of Pekin drinking water treatment is very simple. If the wastewater treatment plant

operational complexities were judged to be equivalent to the number 10, the Pekin groundwater drinking water complexity would be in range of 3 to 4.

Q.18. IN MR. GREGORY'S TESTIMONY AT LINES 157-185 HE IMPLYS THAT THE WATER-TESTING LABORATORY SERVICES AVAILABLE TO THE CITY OF PEKIN ARE INSUFFICIENT COMPARED TO THOSE OF ILLINOIS-AMERICAN. IS THIS ACCURATE?

A. No. There are many certified commercial laboratories available for use by the City of Pekin throughout the State of Illinois that would provide compliance with any analytical reporting requirements.

Q.19. IN YOUR EXTENSIVE EXPERIENCE, IS IT IN ANY WAY UNUSUAL OR AN IMPROPER PRACTICE FOR A CITY WATER SYSTEM TO UTILIZE CONTRACT LABORATORY SERVICES FOR WATER TESTING AND ANALYSIS?

A. Not at all. Contract laboratories can provide excellent analytical results for use in all types of regulatory reporting and is common industry practice, and usually more cost-effective, for smaller facilities such as Pekin. Unless a facility has a well-equipped laboratory and dedicated laboratory technicians to comply with all USEPA Quality Assurance / Quality (QA/QC) requirements, I would recommend that all reportable analyses be performed by a contract laboratory.

Q.20. AT LINES 199-201 OF MR. GREGORY'S TESTIMONY HE STATES, "[A]S A STAND-ALONE SYSTEM, PEKIN WOULD BE UNABLE TO OBTAIN THE HIGH-QUALITY LABORATORY SERVICES PROVIDED BY THE FACILITY I HAVE DISCUSSED AT COMPARABLE COST." IS THIS AN ACCURATE STATEMENT?

A. No. Based on the information provided by Mr. Gregory's testimony at lines 160-185, none of the analyses that Illinois-American performs is special or unique. Bacteriological analyses, and the analysis of nitrate, lead, copper, volatile organics, semi-volatile organics, chlorides (the previous three being disinfection by-products), PCE, perchlorate, MTBE, and radon analytical methods are competently performed by contract laboratories on a routine basis. Generally, contract laboratories specialize in examining and testing water samples for drinking water systems and are, therefore, able to provide their services at competitive prices. As a stand-alone system, the City of Pekin will be able to utilize contract laboratories at or below the cost of having those same services provided in-house.

Q.21. IN LINES 148-149 OF MR. GREGORY'S TESTIMONY HE STATES, "[R]EGULATORY REQUIREMENTS FOR DRINKING WATER ARE MUCH MORE COMPLEX THEN THOSE FOR WASTE WATER." IS THIS AN ACCURATE STATEMENT?

A. In the context of directly comparing the drinking water regulations and the wastewater regulations for the City of Pekin, yes. However, the “complexity” between the two facilities simply lies in the amount of additional sampling and analysis that must be performed for regulatory reporting. There is no doubt in my mind that the City of Pekin and a contract laboratory on its behalf can perform the additional analyses to demonstrate regulatory compliance.

Q.22. IN LINES 154-156 OF MR. GREGORY'S TESTIMONY HE STATES, "[W]ASTEWATER EXPERIENCE DOES NOT PROVIDE ADEQUATE PREPARATION FOR MANAGING A PUBLIC WATER SYSTEM, AND AS MS. CICCONE EXPLAINS, PEKIN'S WASTEWATER COMPLAINCE RECORD IS EXTREMELY POOR." IS THIS AN ACCURATE STATEMENT?

A. No. The Pekin POTW has had one permit exceedance in the past three years as stated in my response to Question 12. All other past issues of noncompliance have been dealt with (see Question 53).

Q.23. IN LINES 420-430 OF MR. JOHNSON'S TESTIMONY HE DESCRIBES THE PEKIN DISTRICT'S USE OF SCADA SYSTEM AS AN EXAMPLE OF HOW THE OPERATION OF THE PEKIN DISTRICT IS MORE COMPLEX THAN THE CITY OF PEKIN'S WITNESSES REALIZE. ARE YOU FAMILAR WITH THE SCADA SYSTEM?

A. I am not directly familiar with the Pekin District's supervisory control and data acquisition (SCADA) system, however I am very familiar with the processes of SCADA systems and their operation. They involve instrumentation and equipment installed in a process, with the results being transmitted to a central location, usually a computer terminal. These systems allow for direct monitoring and control of the process from one central location. The Pekin POTW currently utilizes this technology in their operations, and this is common industry practice for up-to-date facilities.

Q.24. IS THERE ANY REASON TO BELIEVE THAT THE USE OF THE SCADA SYSTEM MAKES OPERATION OF THE PEKIN DISTRICT UNUSUALLY COMPLEX?

A. No. The presence of a SCADA system at the Pekin District water plant does not demonstrate to me that that plant is any more complex than the Pekin POTW.

Q.25. IS THERE ANY REASON TO BELIEVE THAT THE CITY OF PEKIN CANNOT COMPETENTLY RUN THE SCADA SYSTEM?

A. No. The City is currently operating a facility using a SCADA system.

Q.26. DO YOU THINK THAT THE CITY OF PEKIN IS ABLE TO ADEQUATELY ASSUME CONTROL OF THE PEKIN DRINKING WATER SYSTEM?

A. Yes. Based on my review of the City management structure and the quality of the wastewater treatment plant operators, I am fully confident that the City could assume operational management of the drinking water plant.

Q.27. PLEASE DESCRIBE IN GENERAL TERMS YOUR REVIEW OF MS. YVONNE CICCONE'S DIRECT TESTIMONY.

A. A thorough and comprehensive evaluation was made of Ms. Ciccone's testimony, with respect to opinion and substantiation of her remarks using available data and observation. Very little, if any, of her comments were substantiated, with respect to performance, or based on actual data or wastewater treatment plant performance in the last two to three years. Although Ms. Ciccone claims considerable experience, having examined over 300 wastewater treatment plants, it is my opinion that her evaluation did not adequately reflect this level of experience based on the simplicity of her evaluations in the absence of data substantiation.

Q.28. PLEASE COMMENT ON MS. CICCONE'S STATEMENT IN LINE 54-56 OF HER DIRECT TESTIMONY THAT, "AS PART OF MY EVALUATION PROCESS, I ANALYZED THE PAST HISTORY OF THE WASTEWATER SYSTEM AND PERFORMED A COMPREHENSIVE

ASSESSMENT OF THE WASTEWATER SYSTEM'S PRESENT ABILITY TO SUFFICIENTLY HANDLE WASTEWATER."

A. A comprehensive assessment would have identified the need for in depth discussions with POTW operators as a primary source of reliable information and included a complete data evaluation.

Q.29. PLEASE COMMENT ON MS. CICCONE'S STATEMENT IN LINE 84-85 OF HER DIRECT TESTIMONY THAT, "I SPENT APPROXIMATELY SEVEN HOURS AT THE PEORIA IEPA OFFICE IN A CONFERENCE WITH JIM KAMMUELLER."

A. My discussions with Jim Kammueller (Manager of the Peoria office of IEPA) on March 24, 2003 indicated that Ms. Ciccone's conference was considerably less than seven hours in length due to a late arrival by Ms. Ciccone (10:00 a.m. instead of the scheduled 9:00 a.m. meeting), a lengthy break for lunch, and an early departure at 3:00 p.m. for a plane.

Q.30. PLEASE COMMENT ON MS. CICCONE'S STATEMENT IN LINE 128-130 OF HER DIRECT TESTIMONY THAT, " . . . THE SEPARATE SEWAGE COLLECTION SYSTEM EXPERIENCES DETERIORATION THAT ALLOWS FOR THE ENTRY OF THE GROUNDWATER (INFILTRATION) AND STORM WATER (INFLOW)."

A. This statement is unfounded because there are no data or exhibits noted in Ms. Ciccone's testimony demonstrating that Pekin's separate sewage collection system experiences deterioration.

Q.31. PLEASE COMMENT ON MS. CICCONE'S STATEMENT IN LINE 147-149 OF HER DIRECT TESTIMONY THAT, "THERE ARE A WIDE VARIETY OF PROBLEMS THROUGHOUT ALL AREAS OF THE WASTEWATER SYSTEM. THESE PROBLEMS ARE MANIFESTED IN THE POOR TREATMENT OF WASTEWATER IN WASTEWATER TREATMENT PLANT 1."

A. The average percent removal for Total Suspended Solids ("TSS") and Biological Oxygen Demand ("BOD") on a mass basis (lbs/day) in 2002 was 94% and 97%, respectively. These data do not correspond to or support a conclusion that the Pekin POTW engages in "poor treatment." Furthermore, the fact that there has only been one excursion in the last three (3) years confirms that the plant is operated in an exemplary manner.

Q.32. PLEASE COMMENT ON MS. CICCONE'S STATEMENT IN LINE 153-155 OF HER DIRECT TESTIMONY THAT, "THESE PROBLEMS DO NOT ALL STEM FROM ONE SOURCE AREA, BUT ARE THE RESULT

OF SIGNIFICANT DEFICIENCIES IN THE OVERALL DESIGN OF THE SYSTEM . . . ."

A. Ms. Ciccone does not provide any justification or support for this comment. In fact, she does not provide any design parameters for the facility demonstrating that "significant deficiencies" exist. I will address these issues individually and in depth later in my testimony.

Q.33. PLEASE COMMENT ON MS. CICCONE'S STATEMENT IN LINE 156-157 OF HER DIRECT TESTIMONY THAT, ". . . THE FOUR PRIMARY CLARIFIERS AT PLANT 1 ARE NOT PROVIDING SUFFICIENT TREATMENT."

A. Once again, Ms. Ciccone does not provide any data to support this statement. Primary Clarifier effluent TSS data were not collected. Actual TSS data are the primary indicator of treatment efficiency for these units, and a comprehensive evaluation can not be made in their absence.

Q.34. PLEASE COMMENT ON MS. CICCONE'S STATEMENT IN LINE 157-160 OF HER DIRECT TESTIMONY THAT, "THIS IS DUE TO AN INABILITY TO SPLIT THE FLOW IN THE CLARIFIERS EVENLY (A DESIGN DEFICIENCY) . . . ."

A. ADVENT visited the Pekin POTW on two different occasions to examine both a high flow (8.7 mgd) and an average flow (4.03 - 4.2 mgd) condition. At both times, the flow was reasonably split between the sets of clarifiers. During the high flow situation, the flow appeared to very evenly split with calculated overflow rates in the range of 1,100 to 1,200 gpd/sq ft to each clarifier. Importantly, this is within the actual design rate that was originally established for the system. At the low flow conditions, these rates are considerably lower and well within the range of a properly performing Primary Clarifier.

It should be noted that the two pairs of Primary Clarifiers at the Pekin POTW are of different dimensions, thus, there is an unequal flow between the pairs. First, the West pair of Primary Clarifiers has a diameter of 45 ft, and the East pair of Primary Clarifiers has a diameter of 55 ft. It appears that Ms. Ciccone assumed that the four clarifiers were of the same dimensions and, thus, should receive equal flow. This is incorrect. Second, during Ms. Ciccone's visit, one of the Primary Clarifiers was out of service for maintenance and was not receiving any flow. Therefore, the lack of flow through was not due to poor distribution, but a maintenance event.

During my second visit at low flow conditions, I actually measured the height of water flow over the Primary Clarifier weirs and found almost perfect distribution (water height ranged from 0.9 to 1.0 inches). One West clarifier had its weirs about 1 to 1.5 inches too low for perfect distribution at low flow. Even this difference, however, was observed to be insignificant at high flow.

Q.35. PLEASE COMMENT ON MS. CICCONE'S STATEMENT IN LINE 198-201 OF HER DIRECT TESTIMONY THAT, ". . . FLOATABLE AND SOLID MATERIALS WERE BEING COLLECTED IN A PILE ON THE FLOOR, NECESSITATING THAT A PLANT OPERATOR EVENTUALLY SHOVEL THEM INTO A DUMPSTER AS SOME FUTURE TIME. THIS IS EVIDENCE OF POOR 'HOUSEKEEPNING' AND IS NOT A CIRCUMSTANCE THAT WOULD BE EXPECTED IN A PLANT THAT IS MAINTAINED IN GOOD CONDITION."

A. The conveyance system in place at the Pekin POTW to dispose of pretreatment grit and solids is a small system. While adequately sized for the Pekin plant, due to the nature of collected debris, some of it does indeed fall off of the conveyor before it is deposited into the dumpster. This material is routinely shoveled by the operators into the dumpster. During ADVENT's visit, this conveyor was in operation, and the vast majority of the solids were being properly conveyed into the dumpster provided for solids collection. Pretreatment grit and solids collection is by no means an attractive process, and it should not be used to judge the maintenance condition of an entire plant. Advent recognizes that housekeeping is an important part of treatment plant operations, but it does not necessarily demonstrate maintenance inadequacies. The collection process is not representative of the overall cleanliness or effectiveness of the Pekin POTW. Ms.

Ciccone's observation should not have been a factor in her evaluation of the operational performance of the treatment plant.

Q.36. PLEASE COMMENT ON MS. CICCONE'S STATEMENT IN LINE 217-218 OF HER DIRECT TESTIMONY THAT, "A PROPERLY OPERATING PRIMARY CLARIFIER WILL REMOVE 50% OR GREATER OF THE TOTAL SUSPENDED SOLIDS AND ALMOST ALL OF THE FLOATABLES AND SCUM/GREASE THAT ARE NOT REMOVED IN THE FIRST STAGE OF TREATMENT."

A. I agree completely with this statement. A comprehensive evaluation of the operation of the Pekin POTW's primary clarifier, however, cannot be conducted without examining actual data. Ms. Ciccone did not back-up her conclusions of poor performance with actual data. Data, collected at my direction on March 24, 2003, confirmed a removal of total suspended solids of greater than 50% and visual observation indicated that practically all of the scum/grease was removed through the Primary Clarifiers. Therefore, the Primary clarifiers at the Pekin POTW are performing well.

Q.37. PLEASE COMMENT ON MS. CICCONE'S STATEMENT IN LINE 223-225 OF HER DIRECT TESTIMONY THAT, "HOWEVER, THERE APPEARS TO BE SERIOUS PROBLEMS WITH THE ABILITY OF

PLANT 1 TO ACHIEVE SUCH AN EVEN DISTRIBUTION AMONG THE FOUR PRIMARY CLARIFIERS."

A. Again, Ms. Ciccone failed to recognize that two of the four Primary Clarifiers at the Pekin POTW are different sizes. Ms. Ciccone also mentions that one of the four Primary Clarifiers was receiving no incoming wastewater, while the other corresponding clarifier was receiving excess flow. According to my discussions with Pekin POTW personnel, the clarifier that was not receiving incoming wastewater was out of service for maintenance at the time of Ms. Ciccone's visit.

Q.38. PLEASE COMMENT ON MS. CICCONE'S STATEMENT IN LINE 236-239 OF HER DIRECT TESTIMONY THAT, "THIS UNEVEN DISTRIBUTION OF WASTEWATER WITHIN THE CLARIFIERS IS NOTED IN THE IEPA'S JUNE 2000 INSPECTION REPORT, WHICH IS ATTACHED AS EXHIBIT 8.3. THE REPORT INDICATES THAT THE POSSIBLE CAUSE FOR THE UNEVEN DISTRIBUTION IS THAT THE SE AND NW TANKS 'FLOATED' AT SOME TIME IN THE PAST."

A. The IEPA's report states that "Equal flow splitting is needed to the two pairs of primary tanks." It is unclear if this statement is referring to the East or West pair of Primary Clarifiers, or if it compares the two clarifiers within each pair of Primary Clarifiers. Sometime in the 1970's, the tanks did indeed float, according

to my discussions with the City of Pekin personnel. However, repairs were made to piping, and the effluent weirs were re-leveled so that no residual problems remained. In addition, in the rehabilitation of Plant No. 1 in 1988, the Primary Clarifiers were fitted with new effluent weirs and calibrated for equal flow distribution, based on their respective diameters. There is no basis whatsoever for Ms. Ciccone to relate the floating incident of the 1970's to an unequal flow distribution today.

Q.39. PLEASE COMMENT ON MS. CICCONE'S STATEMENT IN LINE 246-247 OF HER DIRECT TESTIMONY THAT, ". . . I NOTICED DURING MY INSPECTION THAT TWO OF THE PRIMARY CLARIFIERS HAD SCUM REMOVAL SYSTEMS THAT WERE SIMPLY NOT REMOVING SCUM AND RELATED FLOATING MATERIALS."

A. As previously discussed, scum removal on all four Primary Clarifiers was operational and effective during both of ADVENT's visits. It should be noted that Ms. Ciccone's visit occurred at a time when there was considerable freezing on the clarifier surfaces and weirs. This fact becomes very obvious by reviewing her photographs. It is entirely possible that Ms. Ciccone confused the ice and snow with grease constituents, which can appear as similar materials. This would account for her visual misinterpretation of the Primary Clarifier performance.

Q.40. PLEASE COMMENT ON MS. CICCONE'S STATEMENT IN LINE 252-254 OF HER DIRECT TESTIMONY THAT, "WHEN CLARIFIERS' WEIRS BECOME BLOCKED, THE DEGREE OF UNEVEN WASTEWATER DISTRIBUTION INCREASES, WHICH SERVES TO EXACERBATE THE PROBLEMS DESCRIBED ABOVE. THIS ALLOWS AN EVEN GREATER AMOUNT OF SOLIDS TO PROGRESS TO LATER STAGES OF TREATMENT . . . ."

A. While this statement is true in a theoretical sense, Ms. Ciccone does not provide data of individual Primary Clarifier effluent TSS to demonstrate that this is a current or realistic condition at the Pekin POTW. As previously discussed, ADVENT's data confirm that the Primary Clarifiers are performing within the specifications given by Ms. Ciccone, i.e., greater than 50 percent removal of TSS.

Q.41. PLEASE COMMENT ON MS. CICCONE'S STATEMENT IN LINE 257-266 OF HER DIRECT TESTIMONY THAT, ". . . A STANDARD OPERATING PROCEDURE IN THE CASE OF PRIMARY CLARIFIERS IS TO MEASURE THE SLUDGE BLANKET BEING FORMED ON THE BOTTOM BY SETTLING SOLIDS . . . A REVIEW OF THE CITY'S DAILY REPORTS FOR 2002 REVEALS THAT IN MAY, . . . PLANT PERSONNEL CEASED RECORDING THIS MEASUREMENT. IT IS DOUBTFUL, THEREFORE, THAT THESE MEASUREMENTS ARE

STILL BEING TAKEN. AGAIN, THIS IS FURTHER EVIDENCE OF OPERATIONAL DEFICIENCIES AT THE PLANT."

A. The operating personnel at the Pekin POTW have always monitored the sludge blanket in the Primary Clarifiers. In fact, ADVENT performed this measurement while on-site and confirmed that the blanket is very acceptable at 1 to 1.5 ft. Starting May, 2002, the blanket was monitored but was not recorded. On February 6, 2003, recording was once again initiated in the Daily Report. As Ms. Ciccone states, it is unknown why operations personnel did not record the solids level in the Primary Clarifiers; however, she claims it is doubtful that these measurements are still being taken. In ADVENT's discussion with plant personnel and review of the historical and current data (Daily Reports), primary solids blanket measurement is and has always been performed as part of daily operations. The recording oversight was simply that the operators were overloaded and chose not to physically record the values. This recording apparently had no impact on operational capability as evidenced by excellent performance during this period.

Importantly, the Pekin POTW operators historically have continuously monitored the underflow TSS concentration and pumping rate of sludge from the Primary Clarifiers. These measurements are actually a better measurement of Primary Clarifier performance than the sludge blanket measurements.

Q.42. PLEASE COMMENT ON MS. CICCONE'S STATEMENT IN LINE 290-291 OF HER DIRECT TESTIMONY THAT, "THE NORTH BASIN HAS EXPERIENCED DISSOLVED OXYGEN CONCENTRATIONS AS LOW AS 0.02 MG/L AND THE SOUTH BASIN AS HIGH AS 9.1 MG/L."

A. Dissolved oxygen ("DO") concentrations are directly proportional to influent oxygen demand (BOD and COD) and basin temperature. As these oxygen demand values fluctuate, the dissolved oxygen concentrations will also fluctuate. Periodic fluctuations are normal for any activated sludge facility and are only a concern when dissolved oxygen concentrations are consistently and persistently below 1.0 mg/L. Ms. Ciccone does not provide the dates where the DO concentrations she mentions above occurred, nor does she provide a corresponding organic load to the plant during these times. These data are necessary in order to perform a complete analysis.

It is true that low DO levels are occasionally experienced in the aeration basins of the treatment plant, especially in warm weather conditions when oxygen is in its least soluble state. There is no evidence that these low levels are a result of improper operation. In fact, the Pekin POTW operators have spent considerable time investigating the cause and effect of low DO in the basins. These efforts are documented in the Operator Logbooks. This proper response of the operators has resulted in excellent performance over the last three years, regardless of the DO concentrations in the aeration basin.

Q.43. PLEASE COMMENT ON MS. CICCONE'S STATEMENT IN LINE 295-297 OF HER DIRECT TESTIMONY THAT, "WHEN THE DISOLVED OXYGEN CONCENTRATION FLUCTUATES TO THE EXTREMES EXPERIENCED IN PLANT 1, OR IS MAINTAINED AT TOO LOW OR TOO HIGH A LEVEL, THE RESULT MAY BE A POOR SETTLING OF SLUDGE IN THE SECONDARY CLARIFIERS."

A. This statement evidently refers to the potential development of "filamentous" organisms that do not settle as well as the preferred "heterotrophic" organisms. While Ms. Ciccone's statement can be true in a theoretical sense, no correlation between DO concentration and effluent TSS concentration at the Pekin POTW was provided by Ms. Ciccone to validate her statement. However, according to the data that ADVENT reviewed and discussions with the Pekin POTW operators, in the last three years, the Pekin POTW has not experienced a poor settling sludge that resulted in loss of biomass from the Secondary Clarifiers.

Q.44. PLEASE COMMENT ON MS. CICCONE'S STATEMENT IN LINE 301-303 OF HER DIRECT TESTIMONY THAT, "MAINTAINING TOO LOW OF A DISOLVED OXYGEN CONCENTRATION CAN AID IN THE PREVALENCE OF FILAMENTOUS BACTERIA, A PROBLEM THAT PLANT 1 HAS EXPERIENCED ON A HISTORICAL BASIS."

A. Discussions with Pekin POTW operational personnel confirm that filamentous bacteria have been an historical observation at the Pekin POTW, but these bacteria have not been specifically identified (via the use of gram stains and other identification techniques); therefore, it is unclear if the types of filaments seen at the POTW are related to low dissolved oxygen concentrations. Many other factors encourage different types of filamentous bacterial growth, such as septicity, high oil and grease, nutrient imbalances, and toxic loadings. The presence of filaments does not automatically indicate a dissolved oxygen issue or a performance concern.

Q.45. PLEASE COMMENT ON MS. CICCONE'S STATEMENT IN LINE 324-327 OF HER DIRECT TESTIMONY THAT, "DURING MY INSPECTION OF PLANT 1, THE SURFACE OF THE SECONDARY CLARIFIERS EXHIBITED SIGNIFICANT AMOUNTS OF FLOATING SOLIDS AND FLOATABLES . . . THE WATER WAS MURKY, MAKING IT IMPOSSIBLE TO OBSERVE THE SLUDGE BLANKET ON THE BOTTOM."

A. First, as the inspector of "over 300 industrial and municipal wastewater treatment facilities," Ms. Ciccone should realize that the ability to observe the sludge blanket in a Secondary Clarifier from looking into it is a very rare and uncommon occurrence in activated sludge facilities. Second, the ability to observe the sludge blanket from simply looking at the secondary clarifier would mean that the

clarifier sludge had accumulated to an undesirable depth just below the water surface, which can lead to regulatory compliance issues. Sludge blankets are measured using a "sludge judge," (a clear plexiglass tube) and during ADVENT's visit, we made use of this device. At that time, the sludge blanket was at 1 foot, which is well within the range of a well-operated facility. Third, a system is almost always considered to be well-operated when the sludge blanket is so far below the water surface as to be unseen.

Q.46. PLEASE COMMENT ON MS. CICCONE'S STATEMENT IN LINE 327-329 OF HER DIRECT TESTIMONY THAT, "FURTHER, THE WEIRS ALONG THE EDGES OF THE SECONDARY CLARIFIERS WERE SO CHOKED WITH ALGAE AND FLOATABLES THAT THEY WERE NOT FUNCTIONING PROPERLY."

A. The photograph supplied as Exhibit 8.6 in Ms. Ciccone's testimony is unclear as to the extent of any algae or solids buildup. It is my opinion that the photographs show treated water flowing between each of the weir teeth, and no impairment blockage was present. Additionally, during ADVENT's visits at both high and low flow conditions, the secondary clarifier weirs on all three units were flowing normally. It is unclear to me what Ms. Ciccone means when she states that the weirs "were not functioning properly." It should also be noted that the presence of algae is common in most outdoor municipal activated sludge clarifier facilities.

Q.47. PLEASE COMMENT ON MS. CICCONE'S STATEMENT IN LINE 353-354 OF HER DIRECT TESTIMONY THAT, "IT SHOULD BE NOTED THAT THE DISCHARGE OF FLOATABLES IS NOT MEASURED BY ANY OF THE TESTS TAKEN FOR COMPLIANCE WITH THE NPDES PERMIT."

A. The total suspended solids (TSS) test will most definitely quantify solids that are the result of floatables. TSS analyses are performed five times per week as required by the facility's NPDES permit and, further, it is analyzed by an outside contract laboratory (third party). Considerable turbulence exists through the chlorine contact discharge and downstream flow measurement devices, so that floatables are dispersed and monitored as TSS.

Q.48. PLEASE COMMENT ON MS. CICCONE'S STATEMENT IN LINE 372-373 OF HER DIRECT TESTIMONY THAT, ". . . HAD PLANT 2 BEEN OPERATED AND/OR MAINTAINED PROPERLY, IT WOULD BE AN ASSET TO THE CITY OF PEKIN'S WASTEWATER SYSTEM."

A. I have seen no evidence, either through ADVENT's investigation or provided in Ms. Ciccone's testimony, which indicates that Plant 2 was not operated or

maintained properly. Ms. Ciccone's statement of improper operation and maintenance is not substantiated with facts.

In fact, an evaluation by a qualified engineering consulting firm (Randolf and Associates) concluded that it would be more operationally cost-effective to shut down Plant No. 2 and utilize the money for upgrades at Plant No. 1. The City followed this recommendation in 1988 after Plant No. 2 had been in operation for over 19 years. Illinois EPA agreed with this decision.

Q.49. PLEASE COMMENT ON MS. CICCONE'S STATEMENT IN LINE 376-377 OF HER DIRECT TESTIMONY THAT, ". . . IEPA VIEWED IT AS A GROSS WASTE OF FUNDS TO BUILD THE PLANT THEN ALMOST IMMEDIATELY SHUT IT DOWN."

A. This statement is completely incorrect. First, the state office of the IEPA agreed with the decision. Secondly, Plant No. 2 had operated for over 19 years and was, therefore, not “almost immediately shut down.”

Q.50. PLEASE COMMENT ON MS. CICCONE'S STATEMENT IN LINE 400-404 OF HER DIRECT TESTIMONY THAT, " . . . PLANT 1 WOULD BE EXPECTED TO PROVIDE COMPLETE TREATMENT FOR UP TO 49 MILLION GALLONS PER DAY. THIS INCREASED LEVEL OF TREATMENT CAPACITY WOULD BE A NEAR IMPOSSIBILITY FOR

EVEN THE MOST TECHNOLOGOCALLY ADVANCED WASTEWATER TREATMENT PLANTS IN THE COUNTRY . . . ."

A. I agree with Ms. Ciccone's later statement that treatment of this volume is without a doubt beyond the reach of Plant 1. In fact, no one that ADVENT talked to could recollect where the requirement for treatment of 14 times the dry weather flow originated. Even the local office of IEPA (Peoria) had no knowledge of this requirement, although the local manager had been in the office when this condition was imposed. The manager had no knowledge of anyone else in the State of Illinois who was under the same condition. Consequently, as far as my evaluation is concerned, this issue is irrelevant.

Q.51. PLEASE COMMENT ON MS. CICCONE'S STATEMENT IN LINE 413-415 OF HER DIRECT TESTIMONY THAT, "IN ORDER FOR EFFECTIVE DISINFECTION TO OCCUR, NOT ONLY MUST THE CONTACT TIME AND CHLORINE DOSAGE BE SUFFICIENT, BUT THE WASTEWATER MUST BE AS FREE OF SOLIDS AS POSSIBLE."

A. Ms. Ciccone is correct in the first part of her statement. There must be adequate chlorine residual and contact time for an effective fecal coliform kill (disinfection). The presence of any solids or readily oxidized material will

increase the chlorine demand and possibly the contact time, thus, causing the chlorine dosage to be higher to obtain sufficient chlorine residual.

According to the Water Environment Federation Manual of Practice No. MOP-11, Operation of Municipal Treatment Plants, the process control variables associated with chlorination systems are: contact and detention time, chlorine residual, indicator bacteria results, and handling of chlorine containers or cylinders (MOP-11, Volume II, page 839). According to the Water Environment Federation Manual of Practice No. FD-10, Wastewater Disinfection, the main control variables for disinfection are disinfectant residual and contact time (MOP FD-10, page 51). No reference is made in either manual of a negative impact of TSS as related to chlorine disinfection.

Q.52. PLEASE COMMENT ON MS. CICCONE'S STATEMENT IN LINE 416-418 OF HER DIRECT TESTIMONY THAT, ". . . PLANT PERSONNEL ATTRIBUTED THE EXCURSIONS TO THE 'VERY DARK AND DIRTY IN COLOR' WATER EXITING THE BASIN, WHICH INDICATES THE WASTEWATER HAS TOO HIGH A CONCENTRATION OF SOLIDS."

A. High solids concentrations can add color to water, but color does not always equal TSS. Many natural compounds can be found in municipal wastewater, especially combined sewer overflow ("CSO") water, which can add color and not significantly affect TSS (for example, tannins and other leachate color bodies).

Ms. Ciccone is making an assumption without any data. There is absolutely no correlation between “dark and dirty” and TSS in wastewater effluents.

Q.53. PLEASE COMMENT ON MS. CICCONE'S STATEMENT IN LINE 435-439 OF HER DIRECT TESTIMONY THAT, ". . . I LEARNED FROM MY MEETING WITH JIM KAMMUELLER OF THE IEPA THAT IN 1996, PLANT 1'S OCCURRENCE OF SUSPENDED SOLIDS VIOLATIONS REACHED SUCH A HIGH NUMBER THAT THE PEORIA IEPA OFFICE RECOMMENDED TAKING LEGAL ACTION AGAINST THE WASTEWATER SYSTEM TO ENFORCE COMPLIANCE WITH IEPA REGULATIONS."

A. With respect to TSS and coliform excursions, Ms. Ciccone’s testimony dealt with a period in 1996 when the overflow of a stormwater basin was limited in disinfection effectiveness due to a regulatory requirement for a chlorine residual, which was too low, i.e., 0.75 mg/L. Although IEPA sent out a standard and required Notice of Violation letter, no threat of legal action in the form of a lawsuit was contained in the letter. In fact, IEPA agreed that the chlorine residual was established at too low a concentration for effective disinfection. Subsequently, the residual chlorine residual was raised by IEPA to 2.0 mg/L. Since that time, there have been no excursions. Conversations between myself and the Peoria office of IEPA on March 24, 2003 confirmed this correct account of the circumstances surrounding the 1996 letter to which Ms. Ciccone refers.

Q.54. DOES THAT CONCLUDE YOUR TESTIMONY?

A. Yes